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Spring 2006

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Leopold Center for Sustainable Agriculture

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Leopold Center funds 30 new projects for 2006

Work has begun on 30 new projects funded by competitive grants offered by the Leopold Center's three research initiatives.

The new projects range from listening sessions to gather farmer input for the next Farm Bill to analysis of risks associated with various niche markets, to improved breeding for forage and biomass crops. First-year cost of the projects, some of which are multi-year efforts, is more than \$555,000.

The projects were selected in a competitive process that began in July 2005, conducted by the Leopold Center's initiatives in Marketing and Food Systems, Policy and Ecology. Proposals received rigorous peer reviews and scrutiny by the Center's 17-member advisory board as well as Center staff.

The Marketing and Food Systems Initiative will fund 13 new projects, with

several designed to help farmers acquire the skills and information needed to start new enterprises. Initiative leader Rich Pirog said: "These projects will give farmers solid information about the costs and risks associated with various niche markets, as well as tools to assess and develop these enterprises."

One project will focus on transaction costs – the costs in a business that are associated with transportation, warehousing, processing orders and customer service. According to some national estimates, transaction costs can range from 4 to 30 percent of sales. The new project will include case studies to illustrate transaction costs associated with niche dairy, meat and produce businesses.

Other grants will be used for a feasibility

GRANTS (continued on page 4)

Center-funded research confirms link between extended crop rotations, soil quality

Farmers who want to maintain soil quality may want to get back to planting extended rotations of grain and forage crops.

Data collected nearly a decade ago as part of a project funded by the Leopold Center show that crop rotations covering at least five years and which include at least three years of forage crops interspaced with corn and soybean, resulted in higher soil quality ratings than either continuous corn or a two-year corn-soybean sequence.

The longer-term rotations had an additional benefit: they were more profitable than continuous corn production.

Results of the Agricultural Research

Service (ARS) study are published in the May/June 2006 issue of *Agronomy Journal*. The study team was headed by soil scientist Douglas Karlen of the ARS' National Soil Tilth Laboratory in Ames.

The study confirms what many in the sustainable agriculture community have believed but have been unable to document: diversity is needed in crop production.

"Extended crop rotations have value for maintaining our soil resources," Karlen said. "We still are in the early phases of measuring soil quality, but we know that physical, chemical and biological characteristics must be considered."

SOIL (continued on page 4)

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2006 Leopold Center Competitive Grant Projects

The following grants are the result of a Summer 2005 Request for Preproposals, which resulted in 62 project submissions. These projects were selected following a competitive review process. More details about each project are available on the Leopold Center web site, www.leopold.iastate.edu.

Marketing and Food Systems Initiative

- **Analysis of transaction costs for small and midsize Iowa farmers**, \$32,967, 1 year, Clyde Walter, *ISU Logistics Operations*; Randy Boeckenstedt, *Center for Transportation Research and Education, ISU*; and Craig Chase, *ISU Extension, Tripoli* [M2006-02]
- **Assessing needs and fostering agricultural entrepreneurship among immigrants in several Iowa communities**, \$15,000, 1 year, Lyle Fleshner, *M&M Divide RC&D, Carroll* [M2006-07]
- **Bridging the Gap: What does it take to bring small and medium-sized producers and retail and food service distributors together?** \$49,500 over 2 years, Mary Holz-Clause, *Agricultural Marketing Resource Center, ISU* [M2006-05]
- **Determining the methods for measuring and the extent of economic and fiscal impacts associated with organic crop conversion in Iowa**, \$15,000, 1 year, David Swenson and Liesl Eathington, *ISU Economics*, and Craig Chase, *ISU Extension, Tripoli* [M2006-12]
- **Functional quality management systems for livestock producers**, \$60,000 over 2 years, John Lawrence, *Iowa Beef Center*; John Mabry, *Iowa Pork Industry Center*; and Mary Holz-Clause, *ISU Value Added Agriculture Extension* [M2006-03]
- **Investigation of economic feasibility of pasture-based dairy operations in Northwest Iowa**, \$7,500, 1 year, Chris Mondak, *ISU Extension, Orange City*, and Tom Olsen, *Storm Lake* [M2006-09]
- **Iowa taste of place project Phase II: Outreach**, \$10,000, 1 year, Rachelle Saltzman, *Iowa Arts Council, Des Moines* [M2006-13]
- **New food entrepreneurs - Value added enterprises for farm profitability**, \$21,188, 1 year, Rich Graves, *Wallace House Foundation*, and Christine Pardee, *Des Moines* [M2006-23]
- **Niche-markets in the agricultural enterprise mix: Farm profit optimization and risk analysis**, \$16,370, 1 year, Shane Ellis, *Iowa Beef Center* [M2006-16]
- **Plan demonstration farm to include farm business incubator and educational use**, \$17,850, 1 year, Linda Barnes, *Marshalltown Community College, Marshalltown* [M2006-24]
- **Planning a facility for value-added farm business incubation and educational use**, \$7,089, 1 year, Linda Barnes and Tom Deimerly, *Marshalltown Community College, Marshalltown* [M2006-25]
- **Strategies to stabilize locally grown produce for year round sales: A feasibility study**, \$53,410 over 2 years, Sam Beattie, *Lester Wilson and Aubrey Mendonca, ISU Food Science and Human Nutrition* [M2006-21]
- **A survey of currently available commercial broilers originating from organic, natural and conventional production systems for cooked meat yields, meat composition and relative value**, \$32,793, 1 year, Joseph Sebranek and Dong Ahn, *ISU Animal Science*, and Sam Beattie, *ISU Food Science and Human Nutrition*, [M2006-01]

For questions, contact initiative leader Rich Pirog, (515) 294-1854, rspirog@iastate.edu.

Policy Initiative

- **Beginning and midsize farm bill analysis and education initiative**, \$25,000 each of 2 years, Mike Duffy, *Beginning Farmer Center, ISU*; and Traci Bruckner, *Center for Rural Affairs, Lyons, Nebraska* [P2006-09]
- **Evaluating the Conservation Security Program utilizing the perceptions and economics of producer participation: Implications for land stewardship in Iowa agriculture**, \$38,337, 1 year, James Kliebenstein and Denis Reich, *ISU Economics* [P2006-06]
- **Farm Bill listening sessions**, \$5,440, 1 year, Leigh Adcock, *Iowa Farmers Union Education Foundation, Ames*; Kathie Starkweather, *Center for Rural Affairs, Lyons, Nebraska*; and Niel Ritchie, *League of Rural Voters, Minneapolis, Minnesota* [P2006-01]
- **Women, land and legacy: Agricultural policy for changing land ownership**, \$12,686, 1 year, Cassi Johnson, *Iowa City*, and Denise O'Brien, *Atlantic, Women, Food and Agriculture Network* [P2006-10]

For questions, contact interim initiative leader Jerry DeWitt, (515) 294-7836, jdewitt@iastate.edu.



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Ecology Initiative grants are listed on next page.

2006 Leopold Center Competitive Grant Projects

(continued)

Ecology Initiative

- **Grazing compatibility in and for future years**, \$53,095 over 5 years, *Ed Johnston, Southern Iowa Forage and Livestock Committee and John Klein, Natural Resources Conservation Service* [E2006-01]
- **Integrated soil and weed management production systems for perennial food crops**, \$39,310 over 2 years, *Gail Nonnecke and Craig Dilley, ISU Horticulture, and Tom Loynachan, ISU Agronomy* [E2006-02]
- **The role of herbaceous woodland perennial diversity for improving nutrient uptake capacity of riparian areas – phase II**, \$33,820 over 2 years, *Jan Thompson and Cathy Mabry-McMullen, ISU Natural Resource Ecology & Management* [E2006-03]
- **New strategies to enhance sustainability of Iowa apple orchards**, \$115,798 over 3 years, *Mark Gleason, ISU Plant Pathology and Matt Liebman, ISU Agronomy* [E2006-04]
- **Bird nesting on rotationally grazed warm- and cool-season grass paddocks in southern Iowa**, \$31,093 for one year, *James Pease and Ryan Marquardt, ISU Natural Resource Ecology & Management* [E2006-05]
- **Optimizing legume establishment in winter small grains**, \$54,770 over 3 years, *Lance Gibson and Jean-Luc Jannink, ISU Agronomy, and Jeremy Singer, USDA-ARS National Soil Tilth Laboratory* [E2006-10]
- **Use of native cover crops to reconstruct native grasslands**, \$8,380 for 1 year, *Brian Wilsey and Andrea Blong, ISU Ecology, Evolution and Organismal Biology* [E2006-11]
- **Development and implementation of low input delivery systems for ethanol co-products in forage based beef systems**, \$51,862 over 3 years, *Dan Loy, ISU Animal Science and Joe Sellers, ISU Extension* [E2006-12]
- **The impact of biodiversity services in rowcrop production in annual versus perennial landscapes**, \$71,979 over 2 years, *Matt O'Neal, ISU Entomology and Lisa A. Schulte, ISU Natural Resource Ecology & Management* [E2006-13]
- **Breeding forage and biomass crops to strengthen perennial agricultural systems**, \$53,902 over 3 years, *E. Charles Brummer, ISU Agronomy* [E2006-15]
- **Assessing soil quality impacts after conversion of marginal cropland to productive conservation**, \$7,292 over 2 years, *Tom Sauer, Cindy Camberdella and David E. James, USDA-ARS National Soil Tilth Laboratory, and Heidi Asbjornsen, ISU Natural Resource Ecology & Management* [E2006-17]
- **Devising a framework for implementing cattle-grazing and fire as management tools on grassland reserves in southern Iowa**, \$22,147 for one year, *James R. Miller, ISU Landscape Architecture and Natural Resource Ecology & Management, and David Engle, ISU Natural Resource Ecology & Management* [E2006-18]
- **Participatory ecology for 'Agriculture of the Middle': Developing tools and partnerships to bridge gaps among science, people and policy in landscape change**, \$54,575 over 3 years, *Lisa Schulte and Ryan Atwell, ISU Natural Resource Ecology & Management, and Lynne M. Westphal, USDA Forest Service North Central Research Station* [E2006-20]

For questions, contact initiative leader Jeri Neal, (515) 294-5610, wink@iastate.edu.



The *Leopold Letter* is also
available on the web at:

www.leopold.iastate.edu

LEOPOLD LETTER MISSION

The mission of the Leopold Letter is to inform diverse audiences about Leopold Center programs and activities; to encourage increased interest in and use of sustainable farming practices and market opportunities for sustainable products; and to stimulate public discussion about sustainable agriculture in Iowa and the nation.

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The Leopold Center for Sustainable Agriculture seeks to identify and reduce adverse socioeconomic and environmental impacts of farming practices, develop profitable farming systems that conserve natural resources, and create educational programs with the ISU Extension Service. It was founded by the 1987 Iowa Groundwater Protection Act. The *Leopold Letter* is available free from the Leopold Center at 209 Curtiss Hall, Iowa State University, Ames, Iowa 50011-1050; (515) 294-3711.



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News & Notes

Leopold Center research on how far food travels from where it is grown to where it is purchased has been referred to as the most widely-cited study on food miles in North America. The assessment is from the authors of a Canadian public health department study that looked at the distance traveled by 58 common foods before they reach supermarkets in southwestern Ontario.

A web search on Google for "food miles" turns up more than 99 million entries, with the Leopold Center study fifth on the list. In recent months, the paper has been featured in a Columbia, Missouri newspaper article about nutrition, *Audubon* magazine, and the largest religious weekly newspaper in Canada. Rich Pirog, who directed the Leopold Center research, regularly fields inquiries from reporters and researchers on the project. He said he's had more calls than usual, possibly due to the increase in fuel prices. Two food miles papers are on the Leopold Center web site at: www.leopold.iastate.edu/pubs/staff/ppp/index.htm and at: www.leopold.iastate.edu/pubs/staff/files/food_travel072103.pdf.

The Flax Working Group of the Value Chain Partnerships project coordinated by the Leopold Center has launched a new web site. The site, www.valuechains.org/flax, has links to research on production, marketing, health and flax use in livestock rations. Established in November 2005, the group is a forum for flax producers, buyers, processors, agencies and consultants to exchange information and to work together to promote flax production in Iowa. Its goal is to help facilitate the growth and development of supply chains for organic and conventional flax that benefit Iowa farmers and rural communities and that are based on loyal, transparent and cooperative relationships between all parties. The group is guided by a management team with members from Iowa State University Extension, Practical Farmers of Iowa and the Leopold Center, along with farmer liaisons.

The web site for the Iowa Produce Market Potential Calculator received an award of merit recently from the Society for Technical Communication. The site was selected from more than 100 entries in the category of user support tools. It was developed by Michele Regenold and Randy Boeckensstedt, from the ISU Center for Transportation Research; with support from Rich Pirog, Laura Miller, Andrew Hug and Mary Adams of the Leopold Center. The site, which calculates the supply and demand of fresh produce that can be grown in Iowa, is at: www.leopold.iastate.edu/research/calculator/home.htm.

Thanks to the Leopold Center, students of all ages will become more familiar with the writings of Aldo Leopold. Each year the Leopold Center provides copies of *A Sand County Almanac* to participants in the Iowa Master Conservationist program, which Iowa State University Extension will offer in 10 counties in 2006. ISU students who are part of the Biology Education Teaching and Learning (BETAL) community also receive a copy of the book. BETAL offers students an opportunity to become involved in service learning projects, social activities and conferences.

Leopold Center Distinguished Fellow Fred Kirschenmann is one of 18 members serving on the Pew Commission on Industrial Animal Production. This is a two-year collaborative effort between the Pew Charitable Trusts and the Johns Hopkins University Bloomberg School of Public Health to study U.S. production of livestock. The commission will host a series of hearings throughout the United States and prepare a report of its findings. Other members include Kansas Governor John Carlin, Bill Nieman who founded Niman Ranch meats, and actress Daryl Hannah.

q&a

A conversation with interim director Jerry DeWitt



Q. What are your top priorities for the Leopold Center? What do you see happening in the coming months?

I believe in tradition. Tradition can play a comforting role and provide a platform for recurring dialogue, exploration and progress. One tradition that I think should be considered is reinstituting the Leopold Center's annual conference.

Early in its history, the Center brought together a diverse group of individuals each year who were filled with both hope and energy. This gathering provided an opportunity for challenges to be aired, problems to be addressed and strong networks of like-minded interest groups to be established.

The Leopold Center has occupied a unique place in Iowa since 1988. As we approach our 20th year of service, leadership and hope, perhaps we should set our sights on renewing this annual gathering to help set a bold course for the Center's third decade. This could be a tremendous homecoming for people and ideas. Let me know your thoughts on reviving this event.

Q. Are there other traditions you want to rejuvenate?

The Center also has a long tradition of active listening, which has helped us better address the needs and ambitions of Iowans in agriculture. Part of our mission is to offer alternatives for a new future in agriculture.

Although we receive regular input on our programs through informal networks, I want to develop a more formalized process through which to gather people's ideas and thoughts. This process would help staff and advisory board members anticipate problems and stay ahead of the curve on issues, trends and emerging needs on the rural landscape.

How could we best do this? I'm open to ideas and want to hear from you. Maybe we could schedule town forums or community visits, or some other type of planned event. This constant stream of inputs and challenges is the lifeblood of the Center.

Q. In addition to an annual conference and listening events, what else might be on the horizon?

During the past several months, staff members have been reviewing the Center's communications efforts. I quickly discovered that the Leopold Center has a variety of research findings and good, practical information that needs to have greater visibility with the people who can best use it. We will try to make this information more readily available on regular radio reports, and work more closely with familiar Iowa farm publications to get this information to you.

Q. What other partnerships are key to meeting your top priorities?

Effective partnerships that are synergistic and on-the-ground make a difference in any organization. No one in Iowa has adequate resources or talents to go it alone on any issue, so we at the Leopold Center are actively pursuing new avenues for partnership with ISU Extension in delivering our messages and good, solid information.

Iowa State University Extension ranks among the very best, if not the best in the nation, in education and outreach and stands ready to work closely with the Center. In the future, we hope to provide ISU Extension staff in 100 county offices with timely and practical information to better serve local farmers, communities and entrepreneurs. My goal is that this partnership will help the Leopold Center fulfill the third part of its mission: to more fully inform Iowans about emerging alternative practices that will build and sustain Iowa agriculture into the 21st century.

As always, I'd like to hear from you. Send me your ideas and comments by email, jdewitt@iastate.edu, or call me at the Center, (515) 294-3711.

Leveraging Leopold

Two grants from the Leopold Center's Marketing and Food Systems Initiative have been used to obtain funds for a new Southwest Iowa Entrepreneurial Center. The new center will serve 22 counties in southwest Iowa. The Southwest Iowa Coalition recently received a \$300,000 Rural Community Development Initiative grant from the

U.S. Department of Agriculture to open the center. The group also has received funds from the Iowa Department of Economic Development.

Leopold Center activities that are part of this regional effort include two projects to explore niche markets for producers. ISU extension specialist Lynn Adams used a \$21,000 grant to

conduct the "Kitchen Project," a series of meetings that involved 54 producers and processors. ISU extension specialist Steve Adams is receiving \$18,000 over two years to survey 1,711 food vendors in southwest Iowa to determine their interest in purchasing natural, organic, locally grown items for their businesses. A producer network will be developed during the second year of the project.

ECOLOGY GRANTS LOOK AT SYSTEMS THAT MIX PERENNIALS, ANNUALS

GRANTS (continued from page 1)

study for a mobile, on-farm processing unit for freezing produce, a two-year project to connect midsize producers with retail and foodservice distributors, and support for food and farm incubators at Marshalltown Community College.

The Ecology Initiative also will fund 13 new projects, including projects that emphasize grasslands management for forage quality for grazing as well as bird wildlife management.

"We want to identify and demonstrate opportunities to create viable farm enterprises that mix perennial and annual agricultural systems," said Ecology Initiative leader Jeri Neal. "These kinds of systems can benefit both the farmer and the environment, but they require a different mix of management skills and resources."

Neal says that there are numerous opportunities in the state to support transi-

tions to these kinds of systems, for example, one new project will look at a more economical way for small and midsize cattle feeders to use co-products from ethanol production plants. The researchers are investigating several methods to make pellets from distillers grains. Pellets are more easily transported and stored than wet distillers grains. The project includes feeding trials and farmer cooperators.

Other projects look more closely at the science behind practice, and include breeding for improved forage and biomass crops, tailoring a soil quality index for horticulture food crops, and learning more about the N-uptake abilities of native grasses.

Four grants in the Policy Initiative focus on federal farm programs. The Iowa Farmers Union and Women, Food and Agriculture Network used grants to conduct lis-

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See special insert for grant list. Click on the Marketing, Policy and Ecology icons for more details of 2006 grant projects: www.leopold.iastate.edu

tening sessions around Iowa in February and March 2006. Reports from the meetings will be shared with policy makers and various government agency personnel as the 2007 Farm Bill is developed.

The Beginning Farmer Center and Center for Rural Affairs received a two-year grant to analyze the impact of the farm bill on beginning and midsize farms. The fourth grant includes a survey of the top-tier Iowa farmers enrolled in the Conservation Security Program and the program's impact on land stewardship practices.

ROTATIONS WITH THREE YEARS OF FORAGE MAINTAINED SOIL QUALITY, PROFIT

SOIL (continued from page 1)

Karlen also said the study points to a need to create markets and uses for forage crops so that producers will have financial incentives to diversify their crop rotations.

"Larger farm size, specialization and separation of agricultural crop and animal enterprises – along with pressure to maximize short-term profit throughout the nation's corn and soybean belt – have decreased implementation of long-term crop rotations over the past 50 years," Karlen said. "The result has been crop rotations that leave land bare for nearly six months each year, spurring organic-matter decomposition and erosion if the soils are tilled."

The researchers collected soil samples from three long-term crop rotation studies and one long-term organic study in Iowa and Wisconsin. They analyzed the samples for several physical, chemical and biological soil quality indicators, which were then used to develop an overall soil quality index (SQI).

Soil samples from extended rotations that included at least three years of forage crops such as alfalfa and oats scored the highest SQI values. The lowest SQI values were associated with continuous corn.

Soil samples from continuous corn had low scores for compaction, percent water stable aggregates (an indicator of potential crusting, runoff or slow infiltration), acidity, soil organic matter and biological activity (measured by microbial biomass carbon).

Total organic matter was the most sensitive indicator, showing significant differences at all locations.

Profit was calculated by subtracting costs of production from potential income based on actual crop yields and the 20-year average non-government supported commodity prices from the National Agricultural Statistics Service (NASS) database.

Karlen said researchers are using similar processes to study crop rotations in other parts of the country. The ARS study in Iowa and Wisconsin was significant because it confirms that extended rotations are important in the northern corn belt.

ARS is the U.S. Department of Agriculture's (USDA's) chief scientific re-

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The study, *Crop Rotation Effects on Soil Quality at Three Northern Corn/Soybean Belt Locations*, is available on the web site of the *Agronomy Journal* at: <http://agron.sciijournals.org>

search agency. Collaborators in the study included colleagues Cynthia Cambardella and David Meek from the National Soil Tilth Laboratory; scientists with the Soil Quality Team of USDA's Natural Resources Conservation Service; and Iowa State University faculty Michael Duffy (economics) and Antonio Mallarino (agronomy).

About the Leopold Center connection

Karlen was principal investigator for a two-year, \$40,000 grant from the Leopold Center in 1997. The grant funded collection and analysis of 925 soil samples from four long-term crop rotation research plots. The plots comparing different crop rotations were located at the ISU Northern Research Farm near Kanawha, the ISU Northeast Research Farm near Nashua (including crop rotation plots and organic research plots), and a USDA-ARS research station in southwest Wisconsin.

Karlen said that when the information was first analyzed, only some of the soil quality indicators showed significant differences between the rotations. Karlen continued this work after the Leopold Center grant ended, further refining the framework to measure soil quality. "The investment the Leopold Center made almost a decade ago is beginning to pay off," he said. "It was a real jumpstart in our work on trying to figure out how to measure soil quality because it gave us a database to work with. And like most scientific endeavors, sometimes it takes time to develop."



Aldo Leopold and 21st Century agriculture

Governor Vilsack proclaimed April 2006 as Aldo Leopold Month to honor the Iowa native for his contributions to natural resource and wildlife management. While Leopold's work in these areas has been widely recognized, his contributions to agriculture are less acclaimed.

We might assume that Leopold's wonderful essays, written in the 1930s and 1940s, would not have much relevance for 21st century agriculture, but we would be wrong. In fact, Leopold's visionary ideas about agriculture may be more relevant today than they were when he first proposed them. Here are several insights from Leopold that offer pragmatic solutions to some of today's farming dilemmas.

All wilderness areas, no matter how small or imperfect, have a large value to land-science. The important thing is to realize that recreation is not their only or even their principal utility. In fact, the boundary between recreation and science, like the boundaries between park and forest, animal and plant, tame and wild, exists only in the imperfections of the human mind.

Leopold recognized that we cannot isolate wilderness from the rest of the world. In nature, everything is interconnected and interdependent. Consequently, we need wildness on our farms in order for farming to be efficient and productive. One example would be pollination by native bees, responsible for one of every three mouthfuls of the food we eat. We also know that we cannot maintain wilderness in secluded patches. Important as wilderness "preserves" are, we still lose species at an unsustainable rate. Leopold acknowledged the need for farms that are natural habitats in order to maintain vibrant wilderness areas.

The trend in animal ecology shows, with increasing clarity that all animal behavior-patterns, as well as most environmental and social relationships, are conditioned and controlled by density. I have studied animal populations for twenty years, and I have yet to find a species devoid of maximum density controls ... in all species one is impressed by one common character: If one means of reduction fails, another takes over.

Leopold observed that highly specialized systems were not viable without massive energy inputs to hold back nature's natural tendency to reduce dense populations of plants and animals. He documented how dense populations of species inevitably become vectors for pests and diseases. Given this ecological principle, it is evident that nature has given permission for our highly specialized mono-culture farming systems to thrive only by virtue of the huge infusion of technologies made affordable by the availability of cheap fossil energy. As we all know, that cheap resource will not be available much longer.

Conservation introduced the idea that the more useful wild species could be managed as crops, but the less useful ones were ignored and the predaceous ones fought, just as in the pioneering days ... agencies were set up to tell us

whether the red-tailed hawk, the gray gopher, the lady beetle, and the meadowlark are useful, harmless or injurious to man."

Leopold was wary of the effort to judge the importance of any species based on its utilitarian value. Contemporary ecologists agree with Leopold. Kevin McCann warns that "if we wish to preserve an ecosystem and its component species then we are best to proceed as if each species is sacred" because we can never determine all of the services provided by the complex inter-relationships and emergent properties of earth's living system. As we rush ahead to introduce novel species, to simplify farm management with our new technological capabilities, we may want to ponder these ecological insights more carefully.

When the land does well for its owner, and the owner does well by his land; when both end up better by reason of their partnership, we have conservation. When one or the other grows poorer, we do not.

Leopold recognized that we will never have conservation unless we create an economy that encourages a mutually beneficial relationship between the farmer and the land. This may be one of Leopold's most powerful insights for farmers and conservationists today. What must develop a culture of care that maintains resilience – the capacity of land for self-renewal – of the entire ecosystem, including farmland.

It was inevitable and no doubt desirable that the tremendous momentum of industrialization should have spread to farm life. It is clear to me, however, that it has overshot the mark ... it is generating new insecurities, economic and ecological, in place of those it was meant to abolish. In its extreme form, it is humanly desolate and economically unstable. These extremes will some day die of their own too-much, not because they are bad for wildlife, but because they are bad for the farmer.

Given his insights into both farming and conservation, Leopold concluded that agriculture would eventually be forced to abandon its "industrial" character, attractive as it may have been. His conclusion no longer seems as revolutionary as it did in 1945, now that we've seen the economic ruin visited upon farmers, ecological destruction inflicted on the land, and the high cost of energy imposed on our industrial economies. Nor is it hard to believe that farming and conservation, environmental care and socio-economic well-being, must go hand in hand.



New ISU Extension leader values Leopold's legacy, links with Center

By Mary Adams Editor

When Jack Payne became Vice Provost for Extension and Outreach at Iowa State University on January 15, 2006, he didn't know that ISU was home to a center honoring one of the most admired figures in his chosen academic field, Aldo Leopold. Payne has spent much of his career engaged in fisheries and wildlife management, and Leopold was one of the godfathers of modern U.S. conservation and resource management studies.

When asked about his longtime respect for Leopold's life and work, Payne responds enthusiastically.

"My graduate degrees are in wildlife management and Aldo Leopold has a special place in that discipline because he founded the first wildlife department in the country at the University of Wisconsin," Payne explained. "Leopold was a trained forester and up until that time, wildlife science was not a separate discipline within universities."

Payne has a copy of Leopold's *Game Management*, the first textbook on wildlife management, published in 1933.

"Even today, with over 70 years of scientific wildlife management behind us, no wildlife professional has been quite as elegant in their writings as was Leopold," he said. "From his essays you will get a great sense of who the man was."

Payne describes himself as a second generation Leopold student. "I was privileged to have some of Leopold's former students as professors during my graduate school years. Among them were Allen

Stokes, who was just finishing his doctorate under Leopold when Leopold died fighting the grass fire at his famous shack, and Robert McCabe, whose son shared a graduate student office with me and was the envy of all because he had Leopold's desk chair as his own."

A guiding philosophy

As a result, Payne said many of Leopold's philosophies guide his own world views.

"Leopold believed as I do that the future of American wildlife lay largely on private land, in the attitudes and decisions of American farmers, not in the bureaucracy of government," Payne said. "That is why I feel privileged to have the opportunity as a conservationist to work in agriculture, to work with the men and women who are making a living off of the land."

After learning about the Leopold Center, Payne also was interested to note that his new domain, ISU Extension, plays a big role in helping fulfill the Center's mission. The founding legislation for the Leopold Center, the 1987 Groundwater Protection Act, calls for the Center to "develop in association with the Iowa cooperative extension service in agricultural and home economics an educational framework to inform the agricultural community and the general public of its findings."

ISU Extension faculty and staff have traditionally been key players in sharing Center research findings, and also have been principal investigators on many

There is so much outstanding discovery ongoing at the Leopold Center, it is important that those results be communicated with Iowa's producers. — Jack Payne, Vice Provost for Extension



projects. Payne sees even more opportunities for ISU Extension and the Center to interact to the benefit of both organizations.

"I am very pleased and excited that Jerry DeWitt is now serving as the Leopold Center interim director," Payne said. "Jerry is a great communicator, scientist and most importantly, an Extension faculty member with a long successful history of bringing science-based information to the people of Iowa."

"There is so much outstanding discovery ongoing at the Center, it is especially important today that those results be communicated with Iowa's producers and other affected clientele. With Jerry's leadership I am sure that the outreach and extension activities of the Center will increase greatly."

A conservation perspective

Payne came to ISU from Utah State University in Logan where he served as vice president for University Extension, director of the Utah Cooperative Extension Service, dean of continuing education, and was a tenured professor in the College of Natural Resources. He also served on the faculties of Texas A&M University and Pennsylvania State University, and spent 10 years with Ducks Unlimited as their national director of conservation.

Much of Payne's career experience has been geared to the wildlife side of natural resource management, but he also has had an opportunity to observe how sustainable agriculture can play a role in wildlife preservation and woodland restoration. Payne already envisions ways in which Leopold's land ethic can help ISU Extension and the Center to better serve the people of Iowa.

"It is most fitting for Iowa as a leading agricultural state to have a center for sustainable agriculture named after Aldo Leopold, a wildlife professor," he explained. "Leopold wrote constantly about the responsibilities that go along hand in hand with the rights of owning private land, especially ag land."

"Leopold once said of agriculture that

PAYNE (continued on page 7)



Photo courtesy Aldo Leopold Foundation Archives

Words from Leopold, the master conservationist

That land is a community is the basic concept of ecology, but that land is to be loved and respected is an extension of ethics.

That wildlife is merely something to shoot at or look at is the grossest of fallacies. It often represents the difference between rich country and mere land.

In dire necessity somebody might write another *Iliad*, or paint an *Angelus*, but fashion a goose?... If, then, we can live without goose music, we may as well do away with stars, or sunsets, or *Iliads*. But the point is that we would be fools to do away with any of them.

A land ethic, then, reflects the existence of an ecological conscience, and this in turn reflects a conviction of individual responsibility for the health of the land. Health is the capacity of the land for self-renewal. Conservation is our effort to understand and preserve this capacity.

Burlington forum explores Leopold's Iowa roots

Born in 1887, Aldo Leopold was the oldest son in a prominent family that owned the Leopold Desk Company in Burlington. He spent much of the first 16 years of his life outdoors, observing wildlife and exploring the wooded limestone bluffs along the Mississippi River. The Leopold home overlooked the river, and hunting and fishing were popular family activities.

Leopold left Iowa in 1903 to attend an Eastern prep school, returning only for family visits. Although he lived most of his adult life in the Southwest and in Wisconsin, the Iowa landscape that Leopold loved as child no doubt influenced his later work as a forester and educator.

Leopold spent several years as a private consultant surveying game populations in the Midwest. The information was included in his 1931 book, *Game Survey of Iowa*, and was used to develop a portion of Iowa's game management policy.

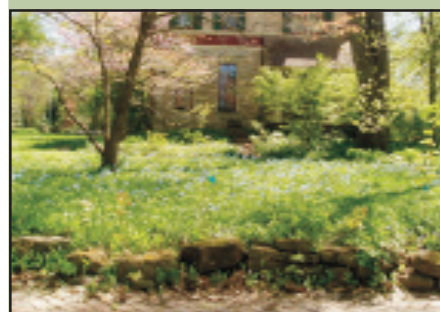
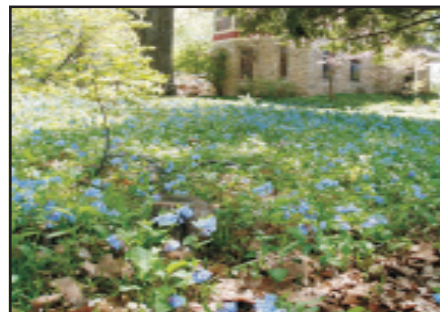
To explore Leopold's Iowa roots, more than 50 people gathered in Burlington on March 25 to attend a half-day Leopold Land Ethic Forum organized by the Leopold Heritage Group. One of the goals of the event was to introduce landowners and stakeholders in conservation to organizations that offer resources for wetland preservation, restoration and forest conservation. Featured speakers included representatives from several local organizations, the Leopold Center, the Iowa Department of Natural Resources and the Natural Resources Conservation Service.

According to Ed Pembleton, who directs the Leopold Education Project (LEP) for Pheasants Forever, more than 8,000 educators who influence at least 1.5 million students nationwide have attended more than 400 LEP workshops over the past 10 years. The workshops use Leopold's book of essays, *A Sand County Almanac*, as a text for lessons to reconnect people with nature.

Sally Collins, associate chief for the U.S. Forest Service, said she shared many of the philosophies espoused by Leopold when he worked for the U.S. Forest Service during its early years. She also shared a personal connection: her husband's uncle, Carl Leopold, was Aldo's younger brother.

"Leopold realized that it took humility to manage land. When you cut trees, they don't always grow back," Collins said. "I have great hope that if Aldo Leopold were here today he would appreciate the U.S. Forest Service's move toward a restoration philosophy that uses nature as a guide and fire as a tool."

The Leopold Heritage Group also worked with Senator Tom Courtney (D-Burlington), who introduced state legislation that would permanently designate April as Aldo Leopold Month. As of press time, the legislation was still in committee; however, Iowa Governor Tom Vilsack approved a one-year proclamation for the 2006 celebration, which was in April.



Aldo Leopold's brother, Frederick, propagated numerous wild flowers, shown above in full bloom, at the Leopold home on Clay Street.



The Leopold home overlooks the Mississippi River.

EXTENSION VICE PROVOST SEES IMPORTANT ROLE FOR LEOPOLD CENTER RESEARCH

PAYNE (continued from page 6)

we are too enamored of show pieces. We have not yet learned to think in small cogs and wheels that determine healthy land. He believed that only knowledge of its cogs and wheels can build a lasting affection for the land and affection underpins ethics."

As a keen outdoorsman, interested in a variety of sports, Payne can see potential for more outdoor recreation in Iowa.

"I love all forms of recreational hunting and fishing," Payne said. "As an Extension wildlife specialist in Texas, I had the opportunity first hand to see how hunting and fishing leases can provide valuable extra income for farmers and ranchers while also providing an incentive for the landowner to conserve and manage the

wildlife habitat existing on the property. In some cases these leases helped to keep these farms and ranches in production agriculture."

Even though he'd barely gotten the boxes unpacked in his new office in Beardshear Hall, Payne took time out of his busy schedule to do some advance reading about the Leopold Center and meet with the Center's review team during their site visit in March.

"It was great to hear the high praise from the national team of scientists who participated in the review of the Leopold Center. They were extremely complimentary of the Center's successes to date and their plans for the future," he said. "I

strongly believe that the Center with its exceptional scientists and outreach faculty will continue to add to the quality of life of Iowa's citizens and bring important sustainable practices to the many men and women of Iowa who continue to make a living off the land."

As Vice Provost for Extension and Outreach at Iowa State, Payne will serve as director of cooperative extension, which has programs in agriculture and natural resources, communities and economic development, families and 4-H youth development. The vice provost also administers University Extension, which includes business and industry programs and continuing education offerings.

'New generation' producer finds new markets

By LAURA MILLER Newsletter editor

Steve Williams is among a new breed of Iowa farmers whose work takes him well beyond organic fields and pastures.

In fact, this fifth-generation farmer from southwest Iowa doesn't own a dairy cow. Yet organic milk from the Naturally Iowa plant in Clarinda that Williams owns with Bill Horner of Red Oak and Ed May of Omaha will be sold to the Costco chain of warehouse club retail stores. Organic ice cream, packaged with the Falk's premium label, is already available at Costco stores in five Midwestern states. And within the next several months, Williams hopes the plant will start production of its new line of drinkable organic yogurt.

Naturally Iowa buys organic milk from three Iowa dairy farmers, and will expand to eight farmers by summer 2006. Housed in a remodeled Pamida store in Clarinda, the plant has been in production since June 2005 and now employs 10 people.

Emerging markets

Considered small by most dairy industry standards, Naturally Iowa is playing a huge role in new niche market opportunities for Iowa producers.

"Naturally Iowa is building the capacity that Iowa needs to open doors for niche dairy farms in Iowa," said Rich Pirog, who directs the Leopold Center's Marketing and Food Systems Initiative and the Value Chain Partnerships project. "Iowa needs these small and midsize farmers as well as the locally owned processing facilities that can supply some of these emerging markets."

Williams was one of seven farmers who

shared their experiences at a series of "Bridging the Gap" workshops throughout Iowa in March. Each workshop was designed for farmers and processors who want to increase their sales of locally grown or "place-based" foods to new customers in educational institutions, health care facilities, restaurants and hotels, grocery and convenience stores.



"If you're going to sell to food service or other companies, you need to understand that it will require an entirely new level of business skills than selling directly," Williams said. "There are so many other issues to think about, from the insurance needed for product liability, to having a delivery truck that can unload at a dock. It's a different level of sophistication."

Making connections

Williams has learned these and other lessons since 2002, when Naturally Iowa was just an idea. Since then, Horner and Williams have taken the company through development of a farmer supply network, products, labels and packaging, and finding investors, to creation and implementation of marketing and business plans.

The most valuable assistance, he said, came from members of the Regional Food Systems Working Group of the Value Chain Partnerships project. The group includes farmers, processors, researchers and staff from various agencies and nongovernmental organizations.

"This group has people involved in other aspects of the value chain who were aware of what we might need

 www.leopold.iastate.edu

Regional Food Systems
Working Group:
www.valuechains.org/rfswg.html

Naturally Iowa:
www.naturallyiowa.com

to do next," Williams said. "They also were familiar with the institutions that we wanted to sell to, which was a great help so we might know what to expect."

The Value Chain Partnerships project, supported by a grant from the W.K. Kellogg Foundation, also has worked closely with Naturally Iowa to document the process so that startup lessons can be shared with other entrepreneurs. The project has helped by tackling some of the obstacles that would have been difficult, if not impossible, for a single entrepreneur to manage.

Testing new concepts

For instance, how to locate environmentally friendly milk and yogurt bottles?

Naturally Iowa wanted to use biodegradable packaging made from a renewable resource. The material, made from corn and marketed by Cargill Dow under the brand name NatureWorks, had never been used for milk. The Bioeconomy Working Group (also part of the Value Chain Partnerships project) provided a small grant to test the safety of the bottles at ISU's Department of Food Science and Human Nutrition.

"Last September, we became the first company in the world to put milk in this bottle," Williams said. "Because of our bottle's unique qualities, we got an audience with Costco, which allowed us to get a contract."

Williams said a number of other dairies are interested in the bottles. Naturally Iowa has shipped samples to companies throughout the United States, Japan, Korea and Australia.

Naturally Iowa also received a grant from the Regional Food Systems Working Group to partner with Food Alliance Midwest. The grant included funds for testing products for the Des Moines and Omaha markets, as well as development of sales strategies and marketing messages.

"We know there's a demand for natural and organic dairy products," said Jim Ennis, who directs Food Alliance Midwest

DAIRY (continued on page 9)



Steve Williams is a 'new generation' farmer who bridges the gap between production, processing and marketing.

Advice from distributors: Tell us your story

Food distributors for institutional and retail markets in Iowa want to hear from farmers.

That's the upshot from a survey of 21 distributors who work with the institutional food service, retail grocery and convenience store markets in Iowa. Connie Hardy, program specialist with the Iowa State University Extension Value Added Agriculture program, interviewed the distributors as part of a new two-year grant from the Leopold Center Marketing and Food Systems Initiative and the Alces Foundation. The purpose of the grant is to help Iowa farmers and processors who want to move from the local sales arena to larger institutional and retail markets.

"Many of the distributors showed a sincere interest in working with the small producer, and are willing to go the extra mile to get local produce. I'm very encouraged by what I heard," Hardy said.

However, that doesn't mean it's a good idea to show up at a warehouse or super-market with a truckload of watermelons.

"They really like producers who want to sell to them to come to them first, even before they have products ready, to work out an arrangement," she said. "They emphasized that they want a product with a story, something they can tell the customer about what makes this product special."

Hardy said farmers should understand that food service distributors have customers with differing needs. Some primarily serve restaurants and health care facilities, while others might distribute to college dining services. She said national distributors often demand more product consistency and availability throughout the year, which can be a limiting factor for Iowa producers.

The information was presented to about 80 people who attended "Bridging the Gap" workshops in Fairfield, Atlantic, Sergeant Bluff and Waterloo during March.

Below, Jeff Jobe, from the USDA Rural Development program presents at the Fairfield workshop.



Also presenting were several farmers and representatives from Hy-Vee Food Stores and SYSCO Corporation.

Future grant activities include discussions with food service customers, production of web-based tools on forming producer supply networks, and availability for one-on-one consultations with producers. To get a list of food sales contacts or other information from the workshop, contact Hardy at (515) 294-8519, chardy@iastate.edu.

SWITCHING FROM DIRECT TO RETAIL MARKETS CAN BE A CHALLENGE

DAIRY (continued from page 8)

in Minneapolis. "This sector has been growing 15 to 19 percent each year and we're expecting a double-digit growth rate the next five years."

It can be a challenge, however, making the switch from direct markets to working with food distributors.

"Some people think that they only need to get a product ready for market and that

the distributors will pick it up and sell it for you," Ennis said. "You need to have a pull-through strategy that guides your products through the distribution system. You also need to have a promotion program that educates distributors and their customers about your new products."

Ennis said processors can benefit from packaging products under private labels,

rather than developing their own label. "Developing your own brand may be rewarding in the long term, but it's an extremely expensive endeavor and you need to include those costs in your marketing plan," he explained.

Williams also worked with a team of ISU agriculture and business students who conducted a market survey as a class project.

Workshop targets niche beef market opportunities

Next to organic markets, the market for niche beef is the next big growth area, according to livestock consultant and marketer Allen Williams.

Williams spoke to a packed house at the Practical Farmers of Iowa annual conference in January. His workshop, "Tune-up for Grass-Based Production and Marketing," was sponsored by Leopold Center's grassland agriculture program.

Williams said "natural" beef sales were \$250 million in 2003, and there's plenty of room for more branded and non-branded products. He said consumers are con-

cerned about the use of feed-grade antibiotics and synthetic hormones in beef production. They're also demanding better flavor and guaranteed tenderness, which Williams says is driven more by animal genetics than feedstock or finishing.

Williams serves as consultant to 10 different branded beef programs and more than 400 individual producers nationwide. He is founding partner and vice president of the Jacob Alliance LLC, which specializes in the use of beef imaging analysis of animals to determine various qualities including meat tenderness. He also serves as

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**Presentation by Allen Williams
on beef market trends:**
[www.leopold.iastate.edu/
news/pastevents/beef/williams.htm](http://www.leopold.iastate.edu/news/pastevents/beef/williams.htm)

a member of the Leadership Team for the Association of Family Farms, an organization the Leopold Center helped found to assist midsize farmers to develop marketing networks featuring their own brand.



China's first hoop building used for hog production is near Beijing. Fabric used for the roof casts a blue glow inside the building.

ISU researchers advise Chinese hoop project

An Iowa State University researcher who worked with the Leopold Center's Hoop Group has helped China design its first hoop building for swine production.

Built near Beijing, the test building houses 120 feeder pigs. Although China has greenhouse hoops, the structures are not suited for livestock, according to Jay Harmon, professor in the Department of Agricultural and Biosystems Engineering.

"The biggest challenge was finding materials that would work," he said. "Fabric used in U.S. hoops is actually sewn in China but was not available for this project." Due to cultural constraints (wood is seen as a temporary construction material), the frame is made of concrete with sliding glass doors on each end, he added.

Harmon and ISU colleague Hongwei Xin have a USDA Foreign Agricultural Service grant to help the Chinese Academy of

Agricultural Sciences learn how to conserve water and control pollution in livestock production. Harmon said hoop structures offer this advantage due to the use of deep bedding.

Harmon and Xin visited China and hosted a Chinese group last summer. The ISU scientists are returning to Beijing in May to help evaluate the hoops progress. The Leopold Center formed the Hoop Group in 1997 and funded several years of research that led to their extensive use in Iowa. The Center also received four years of federal funding to help leverage hoops research in Iowa.

Center tells of "Engaging Agriculture" at many levels in 2005

"Engaging Agriculture" is the Leopold Center's newest annual report featuring the many activities and research projects that were conducted or supported during fiscal year 2005. In a 44-page publication with illustrations, the Center shares the year's striving and accomplishments.

Sections outlining the work done by the three research initiatives in policy, ecology, and marketing and food systems cover the competitive grants, research program activities and related special projects. All

three initiatives report on their education and outreach efforts on campus and around Iowa, ranging from seminars and workshops to field days and computer-simulation demonstrations.

Readers will learn about the results of work funded through the Center's long-term commitment to organic agriculture research conducted by Iowa State University and the continuing support of innovative on-farm research and demonstrations carried out with Practical Farmers of Iowa. The Leopold Center has sought to engage

agriculture at many levels and with individuals and communities throughout the state. The annual report reflects the important themes of value chains work, landscape change and policy options for farmers who want to operate sustainably.

The annual report is written and edited by Mary Adams of the Center staff, with artwork and production provided by Juls Design of Ankeny, Iowa. To get a free copy, contact the Center office at (515) 294-3711.

Team completes external review of Leopold Center programs

The Leopold Center staff spent the week of March 20 hosting members of a review team that assessed the Center's work since 1998. The review process for departments and centers is mandated by Iowa State University, and the Center's evaluation had been in the works since June 2005.

The Center was fortunate to have an excellent review team consisting of three outside evaluators and three Iowa stakeholders. Team members were:

- Jill S. Auburn, National Sustainable Agriculture Research and Education (SARE) program director, USDA-CSREES, Washington, D.C. (review team chair)
- Jim Andrew, Greene County farmer, Jefferson, Iowa
- Nancy G. Creamer, associate professor of Horticultural Science, North Carolina State University, Raleigh, North Carolina.
- Rich Degner, executive director, Iowa Pork Producers Association, Clive, Iowa
- Larry Kallem, retired, former executive director, Iowa Institute of Cooperatives, Madrid, Iowa
- Gary Nabhan, director, Center for Environmental Sciences and Education, Northern Arizona University, Flagstaff, Arizona

The team received a self-study document prepared by the Center prior to the visit. During their time in Ames they met with administrators from Iowa State University and the College of Agriculture; advisory board members; farmers; ISU faculty, DEOs, and center directors; representatives from farm groups, NGOs, conservation and environmental groups; collaborators from other institutions; and Center staff.

The team has submitted a report of their findings and recommendations for future actions to the ISU Provost's Office. The Center, in consultation with the advisory board, will provide a formal, written response to the team's suggestions.

Farmers express farm policy concerns

By LEIGH ADCOCK Iowa Farmers Union Education Foundation

Iowa farmers are caught in a bind: current federal farm subsidy programs reward intensive corn-soybean cropping systems, which farmers know are unhealthy for the soil and the environment. Yet conservation programs included in the 2002 Farm Bill are over-subscribed, underfunded and difficult to access, farmers say.

About 50 producers attended six listening sessions focused on the upcoming Farm Bill and held in various locations around Iowa during February. Funded by a 2006 grant from the Leopold Center's Policy Initiative, the sessions were conducted by the Iowa Farmers Union (IFU) Education Foundation.

Common themes emerged at each session. Almost all farmers want to be good stewards of the land, but in order to make a living, they are forced to use loan deficiency payments and commodity subsidies that are tied to a very few crops: in Iowa, corn and soybeans. This mono-cropping depletes the soil, requiring the use of more and more chemical fertilizers and pesticides.

Farmers also were concerned about low commodity prices, which have forced them to sell grain below the cost of production and rely on federal support to continue farming.

"I was never in the [subsidy] program

until 2002," said Wayne Demmer, a farmer from Dyersville. "The government should assist farmers when they need it. The concept was a safety net to maintain prices."

Most farmers mentioned that the bulk of the subsidy payments go to a small percentage of producers, often large operators who know how to "farm the system."

Other participants said they worried that their sons or daughters who want to farm will not be able to make a living.

Land prices and cash rent rates are too high, which some farmers feel is worsened by the 1031 land exchange, a tax shelter for those who sell property and purchase "like" property within a limited time. Many urban property owners are selling buildings and purchasing Iowa farmland at inflated prices through the 1031 exchange.

Participants also discussed the need to connect young or beginning farmers to those who are getting ready to retire. One suggestion was a federal income tax credit for producers who transition land to a new farmer.

"One farm can't support two families," another farmer said. "We need to work on



Participants at the listening session in Kensett included (left to right) Jim Berge, Kensett; Bruce Biederman, Grafton; Leigh Adcock, Iowa Farmers Union; Norm Backhaus, Manly; and Richard Holstad, Northwood.

alternative, value-added production being accessible to beginning farmers. You won't get small farmers back on the land in commodity production."

Most of the producers favored farmer-owned alternative energy production, such as ethanol, bio-diesel and biomass crops. Some stressed that farmer ownership is crucial. "I don't want us to become an energy colony for eastern investors," one producer commented.

Other concerns included trade, organic issues, water and air quality, and concentration in the livestock industry. Comments from the sessions will be included in a report that will be shared with various groups and policy makers. For information, contact the Iowa Farmers Union at (800) 775-5227.

Do you know your ecological footprint?

An ecological footprint is the measure of how much land and water area a human population needs to produce the resources required to sustain itself and to absorb its wastes, given current technology. With the Iowa State University Bioethics Program, the Leopold Center hosted a visit in November 2005 by William Rees, the Canadian researcher who helped develop the ecological footprint analysis in 1995. Since that time, the concept has won wide acceptance as an effective tool to summarize human impact on the planet, covering everything from food production and land use, to greenhouse gases and pollution.

The following information comes from Rees' two presentations at ISU.

- According to 2001 data, the United States has a footprint that is 20 times larger than the poorest countries. Bangladesh and Pakistan have a foot-

print measuring less than 1.2 acres per person, compared to 23.5 acres in the United States, 19.2 acres in Australia, 16 acres in Canada, 13.6 acres in the United Kingdom, and approximately 5 acres as a world average. In general, energy efficiencies have compensated for increases in the ecological footprint.

- One-fourth to one-fifth of the world's population uses 86 percent of the world's resources. If the entire world population today enjoyed the same consumer lifestyles as residents of Canada and the United States, it would take four additional earth-like planets to accommodate everyone sustainably.
- To keep pace with medium population growth projections estimated by the United Nations, food production must increase 57 percent by 2050. If diets are improved, this could push the needed increase toward 100 percent.
- Using current technology, about 1.2



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Is Humanity Sustainable?
and Agriculture's Contribution to
Our Ecological Footprint:
[www.leopold.iastate.edu/
news/pastevents/rees/rees.htm](http://www.leopold.iastate.edu/news/pastevents/rees/rees.htm)

acres per person are required to provide the diverse high-protein diet enjoyed by western Europeans and North Americans. However, only about 0.6 acres per person is available as cropland for food production.

- Most of the world's nearly 200 nations are partially dependent on food imports. Even some very wealthy countries such as the Netherlands and the United Kingdom have food eco-footprints up to several times larger than their domestic cropland area. Just five countries – the United States, Canada, Australia, France and Argentina – account for 80 percent of cereal exports in global food markets.



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Highlight Events

Living mulch field day July 11

The Leopold Center and Practical Farmers of Iowa will host a field day July 11 at the Craig and LaVon Griffieon farm near Ankeny.

Several plots on the Griffieon farm demonstrate the use of living mulches to protect soil, control weeds and reduce herbicide inputs in a corn-soybean-forage rotation. During the row crop phases of the rotation, living mulches are chemically managed in the row zone to minimize competition with the main crop. The mulches also provide refuges for natural enemies of corn and soybean insect pests.

The research began in 2002, partially funded by the Leopold Center. Researchers have looked at soybean yield response to kura clover, alfalfa and birdsfoot trefoil mulches. They also have found a reduction in the soybean aphid population.

The field day will begin at 9 a.m. For more information about the field day, contact PFI at (515) 232-5661.

Other summer field days

Practical Farmers of Iowa has scheduled more than 20 field days in 2006. The first, on June 24 at the Dan Parizek farm near Tama, will focus on flax trials.

The Leopold Center is a major partner supporting PFI's on-farm research and demonstration program.

Leopold Center-funded research also will be featured at field days for many of the Iowa State University Research and Demonstration Farms. Seventeen field days are scheduled throughout Iowa, beginning June 19 at the Horticulture Station near Ames where researchers will discuss fruit and vegetable topics.

For a schedule of all field days, go to the Leopold Center web site events calendar, www.leopold.iastate.edu/news/events.htm.



What's your footprint?

The Leopold Center and the ISU Bioethics Program hosted William Rees, a Canadian researcher who helped develop the ecological footprint analysis. Read about his presentation on page 11, or check out his materials on the Center web site, www.leopold.iastate.edu.